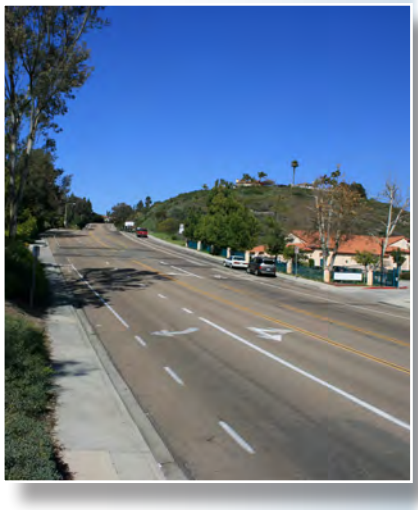
3.6 Constraints to Cycling

The most unique feature of Chula Vista's existing bikeway system is the distinct dichotomy of facility types between the eastern and western sections of the City. The eastern portion of the system is heavily weighted toward Class 2 facilities to take advantage of the wide arterial roadways, while the western portion is dominated by Class 3 routes on the narrower grid street system. The prevalence of specific bikeway facility types has been driven by street patterns and localized topography, and because of these factors, any additional facilities are likely to match the existing ones in the respective areas of the City.

3.6.1 Roadways with High Posted Speed Limits

Most of Chula Vista's existing Class 2 bikeway facilities are on arterial roadways with relatively high posted motor vehicle speeds. This is likely to continue as roadways are completed. Like roadway width, high posted speed limits alone may not be a deterrent to designating a bikeway facility on a particular roadway. For example, many of the facilities in the eastern portion of Chula Vista are on roadways with posted speed limits of up to 50 mph. Experienced cyclists are generally not concerned with adjacent motor vehicle speeds, especially when they can rely on the relative safety of their own Class 2 lane or a wide curb lane. However, less experienced cyclists are more likely to find such conditions uncomfortable and may be less likely to use these high speed roadways. They may instead ride on adjacent sidewalks.



3.6.2 Topography

Currently there are no grade limitations for on-street bicycle facilities such as Class 2 bike lanes and Class 3 bike routes. Most arterial roadway segments in the eastern part of the City have gentle grades, especially in the east-west direction, because they generally follow natural ridge lines. However, many of the north-south arterials cut across the ridges and dividing canyons, making some of their grades long and steep. The undulating topography means that some on-street routes have grades exceeding five percent.

Though a small percentage of cyclists may actually seek out such routes, most would rather avoid them. Little can be done to alleviate this problem except to provide alternative routes to circumvent steep areas wherever possible. These north-south hilly routes may be the only connection between destinations that can accommodate cyclists. Even finding nearby parallel routing may be difficult, since parallel routes are also likely to be north-south.

For Class 1 bike paths, the proper design speed is dependent on the type of use and terrain. Caltrans *Highway Design Manual - Chapter 1000* states that the design speed for bike paths shall be a minimum of 25 mph. Bike paths with grades steeper than four percent and longer than 500 feet should have a design speed of 30 mph.

In general, bike path grades should be kept to a minimum, especially on long inclines. Grades greater than five percent are less desirable because ascents are difficult for the average cyclist to climb and downhill speeds can exceed the design speed of the bike paths. On shared use bike paths where terrain may dictate the design, it is possible to have grades that exceed five percent for short sections, up to 500 feet. Grades steeper than two percent may not be practical for unpaved bike paths or composed of crushed stone or granite. This is recommended because of bike handing issues, potential pedestrian conflicts and erosion control.

3.6.3 Freeway Crossings

Like many cities, the interstate highways through Chula Vista present significant problems in terms of connectivity. The distances between freeway crossing points forces cyclists to plan east-west trips based on their locations. Even then, where underpasses and overpasses do provide access, the roadway is often narrow and cyclists using it are confronted with motor vehicles making their way to and from high speed vehicular on- and off-ramps, often multi-lane. Not all of Chula Vista's interstate crossings have bikeway facilities. Like other issues, this was originally brought to light in questionnaire respondent comments and reviewed during field work.

Caltrans District 11 (San Diego County area) policy is to no longer allow high speed free right turns at interchanges. The Caltrans *Highway Design Manual* also generally discourages such turns because their primary purpose, high motor vehicle capacity, is usually defeated by additional controls required to enhance safety such as yield signs, stop signs or signal controls. Any proposed free right turns should be redesigned as 90 degree turns.

"Share the Road" signs are strongly recommended at freeway interchanges with or without bicycle facilities to warn motorists that they should expect to encounter cyclists.

Freeway crossings without on- and off-ramps are undoubtedly preferred crossing locations for all cyclists, experienced or not. They provide safer crossings than typical interchanges because there are usually fewer motor vehicle turning movements and far less motor vehicle traffic overall than at typical interchanges. However, though they provide an opportunity to avoid typical interchange conditions, they can take cyclists well away from their intended route of travel. They fall far enough apart that they are not always convenient to cyclists.

The City of Chula Vista has 18 freeway crossings that run east-west under and over I-5, I-805 and SR-125. SR-125 and I-805 are six lane freeways with a center median, which makes their underpasses quite long. Few of these underpasses have lighting and only a few have an open center median gap through which light can pass. The underpasses that do not have any natural light through the freeway above limit visibility to the far side and may make it more difficult for motorists to see cyclists, even in daylight conditions.

Lighting through a tunnel enhances the perception of personal safety. The lack of lighting may be intimidating to some cyclists and pedestrians who may therefore avoid the underpass altogether. When the underpass is long, such as when traversing a multi-lane roadway, wider or flared openings are recommended to improve natural lighting and visibility. Generally, the longer the structure, the greater the need for illumination. In certain cases, lighting may be required on a daily, 24 hour basis. All lighting should be recessed and vandal-resistant. Currently, none of the existing underpasses have adequate lighting.

The following are the freeway crossings and their bicycle facility characteristics.

Freeway crossings without bicycle facilities:

- E Street at I-5
- Bay/Industrial Boulevards at I-5
- Orange Avenue at I-5
- Main Street at I-5
- H Street at I-805
- Telegraph Canyon Road at I-805

Freeway crossings with bicycle facilities at on/off ramps:

- Bonita Road at I-805
- Orange Avenue at I-805
- Mt. Miguel Road at SR-125
- Otay Lakes Road at SR-125
- Olympic Parkway at SR-125
- Birch Road at SR-125

Freeway crossings with bicycle facilities without on/off ramps:

- J Street at I-805
- Naples Street at I-805
- Palomar Street at I-805
- EastLake Parkway at SR-125

Freeway crossings with bicycle facilities are predominantly found at I-805 and SR-125. Bike facilities were incorporated into the design of SR-125, which gives the easternmost part of the City safer accessible crossings. Bike facilities on Orange Avenue have been installed since the adoption of the 2005 Chula Vista Bikeway Master Plan. Main Street at I-805 is planned for improvements, but not yet funded. Bicycle facilities exist on most of the east-west routes that cross I-5, which are all overpasses. However, they do not continue over the crossings themselves within Caltrans right-of-way.

3.6.4 Loss or Degradation of Bikeway Facilities

It should be any city's policy to maintain existing bicycle facilities, both in terms of continuity and pavement quality.

Class 2 bikeways can be inadvertently lost or degraded in two ways. First, this can happen when lanes are restriped. This usually occurs at intersections when additional motor vehicle turn lanes are added and the additional space needed is taken partly from the former bike lane. In the second case, bike lanes may be degraded and effectively lost if bikeways are not carefully resurfaced and restriped following roadway and utility repairs. The result can be rough, piecemeal or even, over time, the complete loss of bike lanes.

In both cases, planning and traffic engineering officials should make certain that roadway alterations are well thought out and that comprehensive resurfacing requirements are fulfilled and bikeway facilities retained or restored before projects are considered complete and contractors' bonds released.

3.6.5 Connectivity Issues

The main issues that affect cycling connectivity in Chula Vista are physical, especially the geomorphology of eastern Chula Vista and the freeways.

While western Chula Vista is relatively level, eastern Chula Vista lies on a series of east-west ridge lines separated by canyons. Especially in the north-south direction, many cyclists will find some of these grades to be too strenuous for routine use.

The two interstate highways running north-south through Chula Vista and SR-125 affect non-motorized connectivity. Traversing the typical interchanges when crossing under or over the freeways can be a disagreeable experience as the cyclist is forced to deal with a frequent lack of bikeway facility striping and motor vehicles making lane changes onto multiple on- and off-ramps at speeds considerably higher than a cyclist's normal speed. Even experienced cyclists find this unnerving

3.7 Current and Future Ridership Estimates

Knowing how many people cycle, and for what purposes, can help the City to develop projects and programs to better serve current and future cyclists.

3.7.1 Means of Transportation

Table 10 shows the means of transportation used by workers 16 years and older in Chula Vista to commute from home to work, according to the latest *U.S. Census* (2000).

Table 10: Means of Transportation (Percent of Total Commute Trips)

	Chula Vista	San Diego County	California	U.S.
Drive-alone	76.1	73.9	71.8	75.7
Carpool	14.0	13.0	14.5	12.2
Transit	4.2	3.4	5.1	4.7
Bicycle	*0.3*	*0.6*	*0.8*	*0.4*
Walk	*1.5*	*3.4*	*2.9*	*2.9*
Other*	*3.9*	*5.8*	*4.8*	*4.1*

*Source: 2000 Census Data (*Work-at-home, motorcycle and taxi)*

For purposes of context and comparison, the table also shows this information for San Diego County, California and the United States. Note that bicycling accounts for only 0.3 percent of commute trips among Chula Vista workers. This is a lower share than for the remainder of the county, the state and the nation. Drive-alone is the predominant means of commuting in Chula Vista and commands a higher share than at the county, state and national levels. Conversely, carpooling and public transportation are more common ways to commute in Chula Vista than in the county as a whole.

3.7.2 Bicycle Commuting in Chula Vista

Of the 74,756 workers in Chula Vista counted in the 2000 Census, 223 represent the 0.3 percent of the total that used bicycles to get to work. Since this information is 10 years old, it is possible that the figure has changed. In addition, the current census information on bicycle commuters does not include people who bike to school and those who bike to transit before continuing to work.

This following text refines the 2000 bicycle commuting rate for Chula Vista by adding an estimated number of students who bike to school and workers who bike to transit for their work trip. Data from the *American Community Survey* (ACS) portion of the 2000 Census were used to develop these refined estimates.

Students biking to school
According to the 2009 ACS, there were 62,240 enrolled students from first grade to graduate school in Chula Vista. If approximately one percent of these students bicycled to school, this would translate into an additional 622 cyclists.

Workers biking to transit
The 2009 ACS estimated that 3,156 Chula Vista workers commuted to work by transit. If approximately one percent of transit commuters used their bike to access transit before continuing on their way, this would translate to an additional 32 bicycle commuters. The revised estimate of 877 daily cyclists in Chula Vista would therefore include 223 workers, 622 students and 32 bike-to-transit riders.

3.7.3 Non-Commute Bicycle Ridership

Commute trips represent a minority of bicycle trips. To get a fuller sense of bicycling in a community, it is essential to account for the other reasons that people use bicycles. The *National Bicycling & Walking Study*, published by the Federal Highway Administration in 1995, estimated that for every commute trip made by bicycle there were 1.74 trips made for shopping, social and other utilitarian purposes. Using that figure, we can estimate the number of these other bicycle trips in Chula Vista as follows:

- Number of daily bicycle commuters: 877
- Number of daily trips per commuter: Two (Assuming one trip from home to work and one trip back)
- Number of daily bicycle commute trips: 1,754 (877 x 2)
- Daily bicycle trips for non-commute purposes: 3,051 (1,754 x 1.74)

Finally, many people ride bicycles primarily for recreation. While the bikeway master plan is intended to focus on bicycling for transportation, it is important to keep recreational riders in mind in the formulation of projects and programs. With enough encouragement, including supportive infrastructure, some recreational riders can be expected to make the transition to bicycle commuters. While reliable figures are not readily available, Chula Vista likely has a substantial number of recreational cyclists.

The City is well poised to support increased cycling given its mild weather, generally flat terrain, large expanses of open space and park lands, and a significant shoreline along the San Diego Bay with access to the Bayshore Bikeway. In addition, the City has implemented a large portion of the bikeway projects proposed in the 2005 plan, more than any other city in San Diego County.

3.7.4 Projected Bicycle Ridership

If other communities are any indication, implementation of this plan will result in a sizable increase, at least in relative terms, in bicycle ridership and daily trips. Not surprisingly, bicycling studies from around the country have found a correlation between bikeway miles per capita in a given community and its percentage of cyclists. In a case study of three cities (Portland, San Francisco and Seattle) that implemented bicycle improvements, "after" bicycle ridership on improved corridors was between double and triple the "before" numbers. This is consistent with an observation in the *National Bicycling & Walking Study* that there are *"…three times more commuter cyclists in cities with higher proportions of bike lanes."* Implementation of an interconnected network of facilities, as opposed to a system of improved, but not necessarily linked corridors, would likely have an even more pronounced effect.

Assuming a potential tripling in ridership, such as that found in the *National Bicycling & Walking Study*, the implementation of the bikeway master plan could result in approximately 2,631 daily bicycle commuters throughout the City (877 multiplied by 3). Similarly, daily bicycle trips for shopping, social and other utilitarian purposes would increase to 9,153 (3,051 multiplied by 3). Thought these are order-of-magnitude estimates based on limited data and informed suppositions, it is reasonable to expect that implementation of the bikeway master plan would yield substantive environmental and quality-of-life dividends associated with more bicycling and less driving.